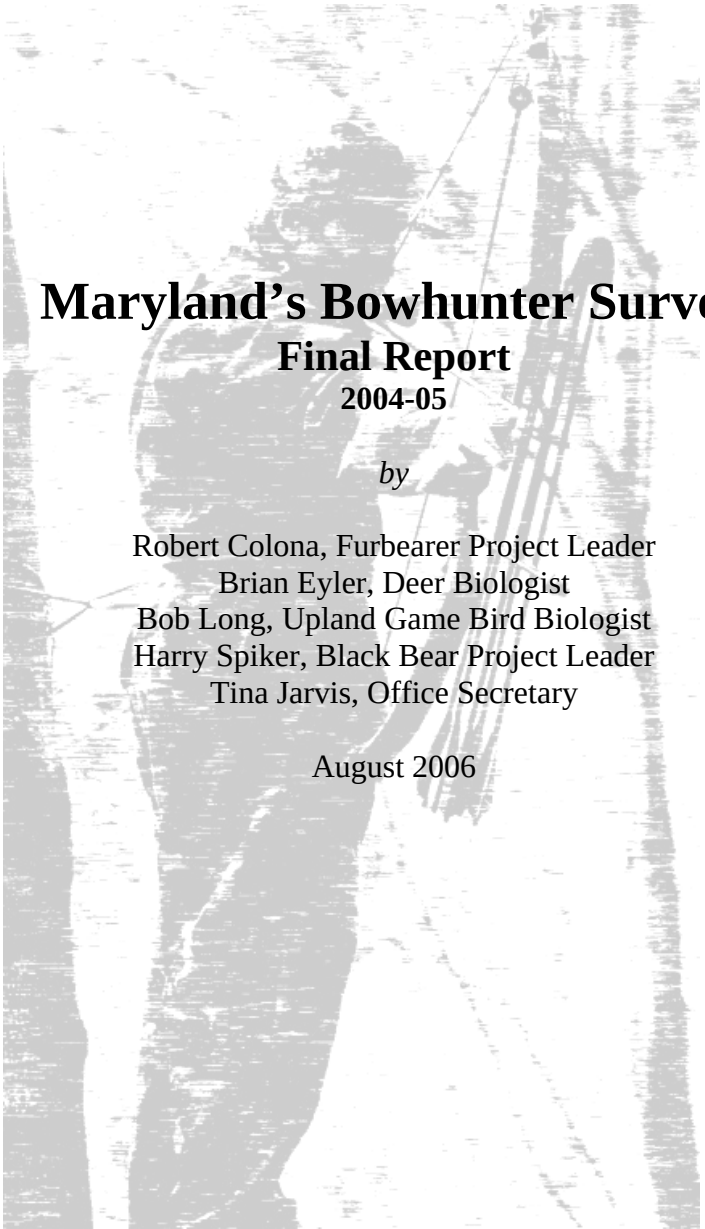
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



Maryland's Bowhunter Survey

Final Report

2004-05

by

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August 2006

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Robert L. Ehrlich, Jr., *Governor*
Michael S. Steele, *Lt. Governor*
C. Ronald Franks, *Secretary*

August 1, 2006

Dear Sportspersons,

The attached report summarizes the Bowhunter Survey data for the 2004-05 archery season. I hope that you will get a chance to read the report, and will also participate in future surveys. Your participation is critical as we continue to monitor Maryland's diverse wildlife resources.

I would like to personally thank each and every individual that took the time to fill out and return the Bowhunter Survey form. Your efforts will contribute greatly to our overall knowledge and conservation of Maryland's wildlife resources. If you do not receive a survey, but are interested in participating, the form can be accessed at www.dnr.state.md.us prior to the upcoming hunting season.

I would also like to express my sincere gratitude to the Maryland Association of Wildlife Conservation (MAWC) for their support of this project. Their generous donations have contributed greatly towards the completion of this valuable project.

Respectfully,
Robert C. Colona
Furbearer Project Leader

Introduction

Bowhunters annually spend a large number of days in the field, and as a result of this avocation, they tend to be quite observant. These 2 traits enable these individuals to be ideal participants in structured observational surveys like the Bowhunter Survey.

In an effort to gain insight into furbearer and other wildlife populations across Maryland, the Bowhunter Survey was established in 2002 and has been conducted annually since. During 2004-05, survey forms were sent to approximately 10,000 bowhunters with 444 returning usable survey forms (Table 1).

Survey participants were asked to complete the survey forms and record any observations of wildlife while they were bow hunting. They were also asked a myriad of other questions, such as the number of hours hunted, county hunted, if the hunt occurred on public or private land, and if lure, cover scent or an elevated stand were used.

Survey participants recorded information at the county level. Counties were then lumped into their respective Physiographic Provinces (Table 1, Figure 1). In some instances, it was necessary to include a county in only 1 Physiographic Province despite 2 Provinces occurring in that county (Frederick and Cecil). The Physiographic Provinces listed in this report consist of the following counties:

Appalachian Plateau Province - Garrett
Ridge & Valley Province – Allegany, Frederick, Washington
Piedmont Province – Baltimore, Carroll, Cecil, Harford, Howard, Montgomery
Western Coastal Plain Province – Anne Arundel, Calvert, Charles, Prince George's, St. Mary's
Eastern Coastal Plain Province – Caroline, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, Worcester

The resulting data was then tabulated and reduced to a standard unit of measurement (observations per 100 hours of hunting). This standard unit of measurement was then used to analyze a number of different variables (e.g. lure, elevated stand, month, region, etc.). Standard errors (SE), where provided, were calculated using ratio estimates and provide a measure of variability in the results.

It should be noted that different species have varying susceptibility to surveillance. Therefore, variations in observation rates between different species may not be an accurate reflection of comparative densities. Nocturnal species, aquatic species, and species that utilize inaccessible areas or habitat types that bowhunters do not frequent will normally have a lower probability of being observed than do other species.

Although vulnerability to observation varies between species, it remains consistent for individual species during successive years. Species such as beaver have a low probability of being observed, however that probability remains the same from year to year. As a result, you can still detect beaver population changes over a period of years.

The inherent value of this type of survey is to accurately track wildlife population trends through time on a statewide scale. It is important to note that data from a number of successive years is necessary before you can begin to accurately assess these trends. Attached you will find results from the 2004-05 Bowhunter Survey, and some additional references to previous survey results. Although there is not sufficient year-to-year information for trend analysis at this time, the results do provide insight about the distribution and relative abundance of many wildlife species. As the body of data from this survey increases in future years, the results will supply one of the cornerstones for the conservation and management of many species.

Furbearers

During 2004-05, all of Maryland's 14 species of furbearers were observed by bowhunters. Although regional observations for some species varied from previous survey periods, statewide observation rates remained relatively stable (Table 1, Figure 2).

Red fox were the most frequently observed furbearer with the greatest number of sightings occurring in the Piedmont Province. In descending order of red fox observation frequency, the regions are ranked as follows: Piedmont, Eastern Coastal, Ridge & Valley, Western Coastal and Appalachian Plateau. Red fox observations declined noticeably in the Eastern Coastal Province while increasing in the Piedmont Province (Table 1, Figure 3). Gray fox observations were highest in the Ridge & Valley Province during 2004-05, and statewide levels remained stable between 2003-04 and 2004-05 (Table 1, Figures 2 & 3).

Coyote were observed most frequently in the Appalachian Plateau, followed in descending order by Eastern Coastal, Ridge & Valley, Piedmont and Western Coastal Provinces. Regionally, substantial increases occurred in the Appalachian Plateau and to a lesser extent in Eastern Coastal (Table 1, Figure 4).

Bobcat and fisher populations are centered in the Appalachian Plateau. Bobcat observation rates have increased slightly since 2002-03, while fisher

observation rates have declined slightly in the same timeframe (Table 1, Figure 5). An appreciable decline in raccoon observations was noted in the Appalachian Plateau, while throughout the remainder of the state they experienced limited increases (Table 1, Figure 5). Opossum and striped skunk are distributed throughout the state and observation frequencies were fairly consistent between the regions and sampling periods (Table1, Figure 5).

Aquatic furbearer (mink, muskrat, beaver, otter and nutria) observation rates are typically lower than many of the terrestrial species. Sampling error probably accounted for abnormally high otter observations in the Western Coastal Province during 2002-03. With that exception, all other aquatic furbearer observations remained relatively stable throughout the sampling periods (Table 1, Figure 6).

Long tailed weasel were the least observed furbearer and were only recorded in the Appalachian Plateau, Ridge & Valley and Piedmont Provinces (Table 1, Figure 5).

The use of lures and/or cover scents did not substantially influence observations. However, the use of an elevated stand did result in increased observations of red fox, gray fox, coyote and raccoon (Table 2, Figure 7). The month in which a hunt was conducted also influenced observations for these same species (Table 3, Figure 8).

For the majority of furbearers, observation rates between public versus privately owned property did not vary substantially. The one notable exception was red fox. Preferred red fox habitat includes a large component of cultivated and/or altered landscapes that are prevalent on private property. This probably accounts for the disparity between observation rates.

Rabbits and Squirrels

Cottontail rabbits and the 3 harvestable species of squirrel (eastern fox, gray, and red) were observed during 2004-05. With the exception of gray squirrels, little variation in observation frequency for the remaining species occurred between sampling periods.

Gray squirrels were the most commonly observed species while red squirrels were encountered the least. Gray squirrel observations appear to have declined between sampling periods in the Appalachian Plateau, Piedmont, and Western Coastal Provinces (Figure 9).

Eastern fox squirrel observations were highest in the Ridge & Valley Province. Red squirrels were detected at low levels in the Appalachian Plateau and Ridge & Valley Provinces. Cottontail rabbit were observed statewide (Table 1, Figure 9).

The month in which a hunt occurred did influence observations for gray squirrel with the highest frequency occurring from 9/15-10/14, and the lowest recorded from 12/15-1/31 (Table 3). Observation rates on public versus privately owned property were only markedly different for gray squirrels (Figure 10).

White-tailed Deer

Bowhunters who completed survey forms in 2004-05 observed 27,256 white-tailed deer (4,613 bucks, 13,150 does, 6,847 fawns, and 2,646 deer of unknown sex or age). Bowhunters observed similar numbers of whitetail bucks, does, and fawns per 100 hours (15.40, 43.90, and 22.86, respectively) as they had during the previous year (15.72, 43.83, and 22.01, respectively). The number of unknown whitetails observed declined slightly from 10.95 in 2003-04 to 8.83 per 100 hours in 2004-05. Bowhunters logged a total of 29,957 hours and the average bowhunter who participated in the survey spent a total of 67.5 hours bowhunting in 2004-05 with an average hunt length of 4.1 hours (Table 1).

Geographic Province Results

Geographically, in 2004-05 bowhunters observed a high of 20.57 whitetail bucks per 100 hours in the Piedmont Province to a low of 5.19 bucks per 100 hours in the Appalachian Plateau Province. These observation rates were similar to previous years of the survey. Bowhunters also reported the most whitetail does per 100 hours (59.66) in the Piedmont Province and the fewest whitetail does per 100 hours (25.85) in the Appalachian Plateau Province (Table 1 and Figure 11). Fawn observations ranged from 26.27 per 100 hours in the Ridge & Valley Province to 15.47 per 100 hours in the Appalachian Plateau Province. The number of unknown whitetails observed per 100 hours ranged from a high mean of 10.33 in the Appalachian Plateau and Ridge & Valley Provinces to a low mean of 5.43 in the Western Coastal Province (Table 1).

Bowhunters in the Western Coastal Province spent the most time bowhunting (53.0 hours/hunter) whereas bowhunters in the Appalachian Plateau Province spent the least amount of time bowhunting (44.0 hours/hunter). Average hunt length ranged from 4.5 hours/hunt in the Appalachian Plateau Province to 3.8 hours/hunt in the Piedmont Province (Table 1).

Buck observation trends in the various geographic provinces are good indicators of current deer populations in Maryland. The Piedmont Province contains substantial urban and suburban development, deer populations have been high, and expectedly, bowhunter observation rates have been high. The Appalachian Plateau Province (Garrett County) on the other hand, has undergone a significant reduction in the deer population

in recent years, and as a result, bowhunter observations have been lower there. The Ridge & Valley Province and Coastal Plain Provinces (eastern and western) have similar amounts of developed and undeveloped areas, similar deer population sizes, and as a result, observation rates of bucks are similar as well.

Lures and Cover Scents

Like previous years, bowhunters observed similar numbers of whitetail bucks and does in 2004-05 regardless of whether they were using lures or cover scents. Bowhunters observed a mean of 14.20 bucks per 100 hours when they did not use lures and a mean of 17.81 bucks per 100 hours when they did use lures (Table 2). Similarly, bowhunters observed a mean of 41.99 does per 100 hours when they did not employ lures compared to a mean of 47.72 does per 100 hours when they did employ lures.

The trend in the number of deer observed was similar for the use of cover scents (Table 2). Bowhunters reported a mean of 14.03 bucks per 100 hours when they did not use cover scents vs. a mean of 16.66 bucks per 100 hours when they employed cover scents. Likewise, the number of does observed per 100 hours did not differ significantly between the use and nonuse of cover scents (scent used: 43.64; scent not used: 44.18).

Elevated Stand Use

Deer observation rates for tree stand use in 2004-05 followed similar trends as previous years. Hunting from a tree stand appears to increase the observation rate of bucks but has little affect on the observation rate of does. Bowhunters in 2004-05 observed 16.74 bucks per 100 hours when hunting from an elevated stand vs. 9.20 bucks per 100 hours when hunting from the ground (Table 2). Bowhunters observed 43.95 does per 100 hours when hunting from an elevated stand vs. 43.64 does per 100 hours when hunting from the ground. Bowhunters spent an average of 24.1 hours/hunter bowhunting from the ground whereas bowhunters hunting from elevated stands spent an average of 58.8 hours/hunter hunting in 2004-05 (Table 2).

Monthly Results

Bowhunters observed an average of 14.50, 19.61, and 13.12 whitetail bucks per 100 hours for the periods 9/15 – 10/14, 10/15 – 11/14, and 11/15 – 12/14, respectively (Table 3). Expectedly, bowhunters observed fewer whitetail bucks per 100 hours for the period 12/15 – 1/31 (8.80). Bowhunters observed similar numbers of whitetail does per 100 hours for all periods, and ranged from a low mean of 42.06 does per 100 hours during 11/15 – 12/14 to a high mean of 44.99 does per 100 hours for the period 9/15 – 10/14 (Table 3).

Monthly buck observation trends appear to follow natural activity patterns of deer and hunter harvest rates. Peak observation rates during 10/15–11/14 coincide with the rut when deer are most active. The decreased observation rate during 12/15–1/31 can be attributed to the hunter harvest of bucks during the preceding three monthly periods resulting in less bucks on the landscape to be observed in December and January.

Deer Management Region Results

Bowhunters in Deer Management Region A (Allegany and Garrett counties) in 2004-05 observed a mean of 5.29 whitetail bucks per 100 hours compared to bowhunters in Region B (remainder of Maryland) who reported a mean of 16.81 bucks per 100 hours (Table 4). Bowhunters also observed 29.08 does per 100 hours in Region A and 45.96 does per 100 hours in Region B.

Deer observation rates in the management regions reflect current population trends for those regions. The Region A deer population declined significantly over the last several years after reaching an all-time (and unhealthy) high. Similarly, much of Region B is currently carrying more deer than recommended. However, liberal antlerless seasons and bag limits have stabilized the deer population in the rural areas of Region B with the end goal being population reduction in most areas.

Public and Private Land Results

Bowhunters in 2004-05 observed more deer per 100 hours on private land than on public land (Table 5). Bowhunters reported seeing 17.29 bucks per 100 hours on private land compared to 9.31 bucks per 100 hours on public land. Similarly, bowhunters saw 49.25 does per 100 hours on private land and 26.62 does per 100 hours on public land (Table 5).

Deer observational rates tend to be higher on private lands because private land deer habitat often is available in better and greater quantities than habitat on public lands. Likewise, private lands most often do not receive the hunting pressure that public lands do, and deer populations are therefore higher.

Doe:Buck and Fawn:Doe Ratios

Bowhunters observed approximately 2.86 adult does for every 1 adult buck statewide in 2004-05 (Table 6). This ratio was similar to the 2.79:1 doe/buck ratio reported in 2003-04. Provincially, bowhunters in the Appalachian Plateau Province observed the most adult does per adult buck (4.98:1) whereas bowhunters in the Western Coastal Province observed the least adult does per adult buck at 2.33:1 (Table 6).

Bowhunters observed approximately 0.52 fawns for every 1 adult doe statewide. Fawn:adult doe ratios were similar provincially and ranged from 0.42:1 in the Piedmont Province to 0.63:1 in the Eastern Coastal Province (Table 6).

Sika Deer

Bowhunters observed 358 sika deer in Dorchester County and 10 sika deer in Worcester County in 2004-05. Sika stags in Dorchester County were observed at a rate of 4.51 per 100 hours of bowhunting, sika hinds at a rate of 10.38 per 100 hours, sika calves at a rate of 2.39 per 100 hours, and unknown sika deer at a rate of 2.17 per 100 hours (Table 7). The observed adult hind:adult stag ratio was 2.30:1, while the calf:adult hind ratio was 0.23:1.

Bowhunters in Dorchester County reported the most stags per 100 hours (7.28) from 10/15–11/14 and the most hinds per 100 hours (13.74) from 9/15–10/14 in 2004-05. Like white-tailed deer, observation rates for sika deer did not differ significantly between hunters who used lures and/or cover scents and hunters who did not use lures and/or cover scents.

Upland Game Birds

Bowhunters observed 5,147 wild turkeys in the 2004-05 hunting season, which was similar to the 5,005 wild turkeys reported in the 2003-04 season. An average of 17.2 turkeys was observed per 100 hours in the 2004-05 season (Table 1), significantly higher than observation rates from 2003-04 and slightly above the 2002-03 average (Figure 12). Although trends will become more evident with more years of data, the Bowhunter Survey appears to be a suitable index to annual turkey numbers. Based on DNR's annual brood surveys, turkey reproduction was exceptionally poor in the summer of 2003, and subsequently only 8.9 turkeys were observed per 100 hours hunted in the 2003-04 season. This year's increase in sightings suggests that the moderate reproductive success observed in the summer of 2004 bolstered turkey numbers in the fall and winter. Similar to previous years, bowhunters in the Appalachian Plateau and the Ridge & Valley Provinces reported seeing the greatest number of turkeys (25.0 and 27.8 per 100 hours, respectively). Wild turkeys were reported most often in Wicomico, Talbot, Washington, Somerset, and Allegany counties. The data confirm that turkey populations are strong in most regions of the state with the exception of the Piedmont Region where densities are much lower.

Ruffed grouse are only found in the western mountains. In the 2004-05 season, bowhunters observed the most grouse in the Appalachian Plateau (Table 1, Figure 13; 3.3 per 100 hours). Fewer grouse were seen in the Ridge & Valley Province, which includes Allegany and Washington counties (0.9 and 0.6 per 100 hours, respectively). Over the last 3 years, grouse sightings in the Appalachian Plateau paralleled trends in turkey sightings, suggesting that both of these ground-nesting birds are subject to similar annual changes due to reproductive success. Grouse were also observed, though infrequently, in Frederick County (2 grouse) and Montgomery County (1).

Although the data are limited, the survey demonstrates that quail are most abundant in the Eastern Coastal Province (Table 1). Sightings declined significantly in this area, dropping from 4.0 per 100 hours in 2003-04 to 0.9 per 100 hours in 2004-05. Quail were also sighted in Price Georges, Howard, St. Mary's, and Carroll counties.

Black Bear

Maryland bowhunters who completed and returned the 2004-05 Bowhunter Survey reported observations of black bears in Garrett, Allegany, and Washington counties. Black bears have previously been observed by bowhunters across all 4 counties of Maryland's current black bear range (Garrett, Allegany, Washington, and Frederick counties). These four western counties encompass the Appalachian Plateau and Ridge & Valley Provinces.

During the 2004-05 hunting year, survey respondents reported a total of 89 black bear observations statewide, 59 in the Appalachian Plateau Province (Garrett County) and 30 in the Ridge & Valley Province (including Allegany and Washington counties). Bowhunters observed 1.04 black bears per 100 hunting hours across the black bear's range. When looking at the Physiographic Province level, bowhunters observed 3.19 black bears per 100 hours in the Appalachian Plateau Province and 0.45 black bears per 100 hours in the Ridge & Valley Province (Table 8).

As additional years of data are collected through the Bowhunter Survey, black bear population trends may be able to be observed. These observations will prove especially valuable in monitoring range expansion into new territories and increases in density in Maryland's peripheral black bear range.

Other species

Bowhunters reported a myriad of other species while bowhunting. Geese, crows, mourning doves and ducks were observed most frequently (Table 9).

Table 1. Observations of select species per 100 hours (SE in parentheses) by archery hunters statewide and provincially during the 2004-05 Maryland archery season.

	Number Observed Per 100 Hours Hunted					
Sex/Age Class	**Statewide**	**Appalachian Plateau**	**Ridge & Valley**	**Piedmont**	**Western Coastal**	**Eastern Coastal**
Furbearers						
Beaver	0.10 (0.04)	0.38 (0.37)	0.06 (0.04)	0.04 (0.02)	0.29 (0.16)	0.01 (0.01)
Bobcat	0.10 (0.03)	0.59 (0.24)	0.25 (0.09)	0.02 (0.02)	0.00 (0.00)	0.01 (0.01)
Coyote	0.32 (0.10)	2.22 (1.03)	0.34 (0.11)	0.05 (0.02)	0.02 (0.02)	0.36 (0.29)
Fisher	0.01 (0.01)	0.16 (0.12)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Gray Fox	1.17 (0.30)	0.27 (0.16)	2.26 (0.96)	0.38 (0.14)	1.45 (0.42)	1.16 (0.81)
Mink	0.06 (0.04)	0.00 (0.00)	0.22 (0.18)	0.02 (0.02)	0.02 (0.02)	0.00 (0.00)
Muskrat	0.04 (0.02)	0.22 (0.21)	0.03 (0.02)	0.00 (0.00)	0.06 (0.04)	0.06 (0.03)
Nutria	0.03 (0.02)	0.00 (0.00)	0.03 (0.03)	0.00 (0.00)	0.00 (0.00)	0.11 (0.08)
Opossum	0.30 (0.06)	0.27 (0.17)	0.52 (0.17)	0.23 (0.11)	0.4 (0.14)	0.11 (0.04)
Otter	0.05 (0.02)	0.27 (0.28)	0.00 (0.00)	0.00 (0.00)	0.04 (0.04)	0.10 (0.06)
Raccoon	1.59 (0.15)	0.05 (0.06)	1.53 (0.42)	1.84 (0.24)	1.77 (0.29)	1.57 (0.35)
Red Fox	5.25 (0.36)	0.32 (0.14)	3.31 (0.50)	10.07 (0.76)	2.04 (0.4)	4.50 (0.65)
Striped Skunk	0.14 (0.04)	0.05 (0.06)	0.30 (0.12)	0.07 (0.03)	0.21 (0.12)	0.07 (0.03)
Weasel	0.02 (0.01)	0.05 (0.05)	0.04 (0.03)	0.03 (0.02)	0.00 (0.00)	0.00 (0.00)
Forest & Upland Game						
Black Bear	0.30 (0.09)	3.19 (0.97)	0.45 (0.17)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Bobwhite Quail	0.25 (0.10)	0.00 (0.00)	0.00 (0.00)	0.15 (0.11)	0.04 (0.03)	0.85 (0.39)
Cottontail Rabbit	2.60 (0.35)	0.59 (0.27)	4.01 (1.07)	2.03 (0.40)	2.57 (0.91)	2.54 (0.60)
Eastern Fox Squirrel	1.90 (0.34)	2.06 (1.40)	6.15 (1.21)	0.17 (0.07)	0.42 (0.28)	1.13 (0.48)
Gray Squirrel	82.37 (3.84)	14.17 (3.20)	82.33 (6.27)	84.41 (6.87)	93.77 (8.01)	89.26 (8.58)
Red Squirrel	0.20 (0.10)	0.43 (0.44)	0.74 (0.44)	0.02 (0.02)	0.00 (0.00)	0.00 (0.00)
Ruffed Grouse	0.31 (0.10)	3.30 (1.16)	0.45 (0.16)	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)
Wild Turkey	17.18 (1.67)	25.04 (5.49)	27.77 (4.15)	3.32 (1.06)	17.54 (3.3)	22.83 (4.65)
White-tailed Deer						
Buck	15.40 (0.83)	5.19 (1.05)	14.67 (1.69)	20.57 (1.75)	14.38 (1.33)	12.78 (1.40)
Doe	43.90 (2.30)	25.85 (4.78)	44.25 (4.58)	59.66 (4.66)	33.52 (3.72)	35.43 (4.12)
Fawn	22.86 (1.52)	15.47 (2.74)	26.27 (3.53)	25.05 (2.80)	18.17 (2.91)	22.16 (2.98)
Unknown	8.83 (0.64)	10.33 (2.54)	10.33 (1.40)	10.00 (1.21)	5.43 (1.1)	8.03 (1.27)
No. Of Hunters Who Reported At Least One Hunt In The State or Province	444	42	137	187	99	137
No. Of Hunts Logged	7,352	412	1,610	2,384	1,271	1,675
Total Hrs. Hunted	29,957	1,849	6,730	9,164	5,251	6,963
Avg. Total Hrs. Per Hunter	67.5	44.0	49.1	49.0	53.0	50.8
Avg. No. Of Hrs. Per Hunt	4.1	4.5	4.2	3.8	4.1	4.2
Total No. Of Deer Observed	27,256	1,051	6,428	10,564	3,754	5,459

Table 2. Observations of select species per 100 hours (SE in parentheses) by archery hunters who used or did not use lures, cover scents, or elevated stands during the 2004-05 Maryland archery season.

	Number Observed Per 100 Hours Hunted					
	Lures		Cover Scents		Elevated Stand	
Sex/Age Class	**Used**	**Not Used**	**Used**	**Not Used**	**Used**	**Not Used**
Furbearers						
Beaver	0.11 (0.07)	0.10 (0.05)	0.10 (0.05)	0.11 (0.06)	0.09 (0.05)	0.15 (0.06)
Bobcat	0.14 (0.07)	0.08 (0.02)	0.08 (0.04)	0.13 (0.04)	0.11 (0.03)	0.08 (0.04)
Coyote	0.43 (0.20)	0.26 (0.11)	0.38 (0.14)	0.25 (0.15)	0.27 (0.09)	0.53 (0.39)
Fisher	0.03 (0.02)	0.00 (0.00)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.00)
Gray Fox	1.94 (0.75)	0.78 (0.16)	1.62 (0.49)	0.67 (0.19)	1.29 (0.36)	0.58 (0.21)
Mink	0.15 (0.11)	0.01 (0.01)	0.10 (0.08)	0.01 (0.01)	0.07 (0.05)	0.02 (0.02)
Muskrat	0.04 (0.04)	0.04 (0.02)	0.05 (0.03)	0.03 (0.02)	0.04 (0.02)	0.04 (0.03)
Nutria	0.01 (0.01)	0.04 (0.03)	0.05 (0.03)	0.01 (0.01)	0.04 (0.02)	0.00 (0.00)
Opossum	0.29 (0.09)	0.30 (0.07)	0.29 (0.07)	0.31 (0.07)	0.27 (0.06)	0.45 (0.14)
Otter	0.09 (0.06)	0.02 (0.02)	0.06 (0.03)	0.03 (0.03)	0.05 (0.03)	0.04 (0.04)
Raccoon	1.97 (0.31)	1.39 (0.14)	1.86 (0.26)	1.29 (0.15)	1.81 (0.18)	0.53 (0.13)
Red Fox	6.08 (0.62)	4.83 (0.40)	5.42 (0.48)	5.06 (0.51)	5.75 (0.40)	2.92 (0.45)
Striped Skunk	0.25 (0.09)	0.09 (0.02)	0.17 (0.06)	0.12 (0.03)	0.14 (0.04)	0.15 (0.07)
Weasel	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)	0.03 (0.02)	0.02 (0.01)	0.02 (0.02)
Forest & Upland Game						
Black Bear	0.38 (0.17)	0.25 (0.09)	0.24 (0.11)	0.36 (0.13)	0.24 (0.08)	0.58 (0.30)
Bobwhite Quail	0.34 (0.21)	0.20 (0.09)	0.24 (0.13)	0.26 (0.15)	0.26 (0.11)	0.21 (0.19)
Cottontail Rabbit	2.84 (0.44)	2.48 (0.41)	2.40 (0.39)	2.82 (0.57)	2.31 (0.28)	3.97 (1.28)
Eastern Fox Squirrel	0.96 (0.23)	2.36 (0.46)	1.69 (0.48)	2.12 (0.47)	1.66 (0.36)	3.01 (0.83)
Gray Squirrel	88.93 (6.36)	79.11 (3.89)	84.62 (5.51)	79.94 (4.67)	86.99 (4.18)	61.00 (5.77)
Red Squirrel	0.43 (0.27)	0.08 (0.06)	0.15 (0.10)	0.25 (0.18)	0.19 (0.11)	0.26 (0.26)
Ruffed Grouse	0.24 (0.11)	0.34 (0.13)	0.14 (0.07)	0.49 (0.17)	0.18 (0.06)	0.88 (0.40)
Wild Turkey	14.50 (2.09)	18.51 (2.07)	16.82 (2.11)	17.58 (2.36)	16.42 (1.84)	20.73 (3.10)
White-tailed Deer						
Buck	17.81 (1.44)	14.20 (0.86)	16.66 (1.17)	14.03 (1.05)	16.74 (0.90)	9.20 (1.13)
Doe	47.72 (4.18)	41.99 (2.31)	43.64 (3.32)	44.18 (2.88)	43.95 (2.38)	43.64 (4.60)
Fawn	25.56 (2.56)	21.51 (1.46)	23.63 (2.34)	22.01 (1.71)	23.82 (1.67)	18.40 (2.06)
Unknown	9.77 (1.16)	8.37 (0.64)	7.80 (0.88)	9.96 (0.83)	8.84 (0.69)	8.78 (1.08)
No. Of Hunters Who Reported At Least One Hunt	281	419	284	330	419	221
No. Of Hunts Logged	2,367	4,985	3,681	3,671	6,069	1,283
Total Hrs. Hunted	9,949	20,008	15,597	14,360	24,641	5,316
Avg. Total Hrs. Per Hunter	35.4	47.8	54.9	43.5	58.8	24.1
Avg. No. Of Hrs. Per Hunt	4.2	4.0	4.2	3.9	4.1	4.1
Total No. Of Deer Observed	10,035	17,221	14,306	12,950	23,002	4,254

Table 3. Observations of select species per 100 hours (SE in parentheses) by archery hunters during 4 monthly periods of the 2004-05 Maryland archery season.

	Number Observed Per 100 Hours Hunted			
Sex/Age Class	**9/15 – 10/14**	**10/15 – 11/14**	**11/15 – 12/14**	**12/15 – 1/31**
Furbearers				
Beaver	0.06 (0.04)	0.11 (0.05)	0.12 (0.07)	0.13 (0.06)
Bobcat	0.19 (0.09)	0.09 (0.03)	0.04 (0.02)	0.10 (0.06)
Coyote	0.79 (0.33)	0.27 (0.10)	0.13 (0.06)	0.03 (0.03)
Fisher	0.00 (0.00)	0.02 (0.02)	0.01 (0.01)	0.00 (0.00)
Gray Fox	1.49 (0.46)	1.10 (0.25)	0.82 (0.24)	1.49 (0.66)
Mink	0.15 (0.15)	0.07 (0.03)	0.00 (0.00)	0.00 (0.00)
Muskrat	0.01 (0.01)	0.04 (0.02)	0.03 (0.02)	0.13 (0.09)
Nutria	0.07 (0.05)	0.03 (0.02)	0.00 (0.00)	0.03 (0.03)
Opossum	0.30 (0.11)	0.31 (0.07)	0.29 (0.13)	0.29 (0.08)
Otter	0.03 (0.03)	0.04 (0.04)	0.06 (0.06)	0.05 (0.05)
Raccoon	2.57 (0.44)	1.81 (0.24)	0.87 (0.14)	0.63 (0.17)
Red Fox	5.05 (0.54)	4.93 (0.39)	4.71 (0.51)	7.65 (0.89)
Striped Skunk	0.19 (0.10)	0.15 (0.05)	0.12 (0.04)	0.08 (0.06)
Weasel	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.00 (0.00)
Forest & Upland Game				
Black Bear	0.54 (0.16)	0.22 (0.07)	0.23 (0.13)	0.24 (0.18)
Bobwhite Quail	0.00 (0.00)	0.43 (0.19)	0.22 (0.17)	0.21 (0.18)
Cottontail Rabbit	3.26 (0.57)	2.28 (0.30)	2.43 (0.46)	2.78 (0.90)
Eastern Fox Squirrel	2.55 (0.62)	2.11 (0.43)	1.45 (0.40)	1.05 (0.43)
Gray Squirrel	91.86 (4.89)	87.13 (4.23)	74.25 (5.45)	67.86 (6.10)
Red Squirrel	0.25 (0.21)	0.34 (0.23)	0.05 (0.04)	0.00 (0.00)
Ruffed Grouse	0.18 (0.07)	0.43 (0.15)	0.18 (0.11)	0.42 (0.28)
Wild Turkey	16.56 (2.77)	17.53 (1.96)	18.26 (2.91)	14.98 (3.34)
White-tailed Deer				
Buck	14.50 (1.28)	19.61 (1.03)	13.12 (0.95)	8.80 (1.02)
Doe	44.99 (3.17)	44.15 (2.53)	42.06 (3.14)	44.97 (4.24)
Fawn	24.48 (1.97)	24.15 (1.89)	20.40 (1.70)	21.08 (2.65)
Unknown	6.77 (0.79)	9.26 (0.82)	8.55 (0.89)	11.73 (1.79)
No. Of Hunters Who Reported At Least One Hunt During The Time Period	340	408	335	206
No. Of Hunts Logged	1,779	2,820	1,749	1,004
Total Hrs. Hunted	6,695	11,634	7,810	3,818
Avg. Total Hrs. Per Hunter	19.7	28.5	23.3	18.5
Avg. No. Of Hrs. Per Hunt	3.8	4.1	4.5	3.8
Total No. Of Deer Observed	6,075	11,304	6,571	3,306

Table 4. Observations of white-tailed deer per 100 hours (SE in parentheses) by archery hunters in Deer Management Region A (Allegany and Garrett counties) and Region B (the remainder of Maryland) during the 2004-05 Maryland archery season.

	Number Observed Per 100 Hours Hunted	
Sex/Age Class	**Region A**	**Region B**
Buck	5.29 (0.77)	16.81 (0.90)
Doe	29.08 (3.49)	45.96 (2.54)
Fawn	16.76 (2.08)	23.71 (1.69)
Unknown	9.16 (1.54)	8.79 (0.69)
No. Of Hunters Who Reported At Least One Hunt In The Region	81	403
No. Of Hunts Logged	816	6,536
Total Hrs. Hunted	3,669	26,288
Avg. Total Hrs. Per Hunter	45.3	65.23
Avg. No. Of Hrs. Per Hunt	4.5	4.0
Total No. Of Deer Observed	2,212	25,044

Table 5. Observations of white-tailed deer per 100 hours (SE in parentheses) by archery hunters on private and public lands during the 2004-05 Maryland archery season.

	Number Observed Per 100 Hours Hunted	
Sex/Age Class	**Private Lands**	**Public Lands**
Buck	17.29 (0.99)	9.31 (1.09)
Doe	49.25 (2.78)	26.62 (2.60)
Fawn	26.22 (1.85)	12.01 (1.40)
Unknown	9.53 (0.77)	6.60 (0.93)
No. Of Hunters Who Reported At Least One Hunt In The Region	390	164
No. Of Hunts Logged	5,926	1,426
Total Hrs. Hunted	22,865	7,092
Avg. Total Hrs. Per Hunter	58.63	43.24
Avg. No. Of Hrs. Per Hunt	3.9	5.0
Total No. Of Deer Observed	23,388	3,868

Table 6. Number of adult does per 1 adult buck and number of fawns per 1 adult doe observed provincially by archery hunters during the 2004-05 Maryland archery season.

Province	Adult does/Adult buck	Fawns/Adult doe
Appalachian Plateau	4.98	0.60
Ridge & Valley	3.02	0.59
Piedmont	2.90	0.42
Western Coastal	2.33	0.54
Eastern Coastal	2.77	0.63
Statewide	*2.86*	*0.52*

Table 7. Number of sika deer observed per 100 hours (SE in parentheses) by archery hunters in Dorchester County during the 2004-05 Maryland archery seasons.

Sex/Age Class	Number Observed Per 100 Hours Hunted
Stag	4.51 (1.16)
Hind	10.38 (3.02)
Calf	2.39 (0.71)
Unknown	2.17 (0.69)

Table 8. Observations of black bears per 100 hours by archery hunters statewide and provincially during the 2002-03, 2003-04 and 2004-05 Maryland archery seasons.

	Black Bears Observed Per 100 Hunting Hours			Total Hours Hunted		
Year	Appalachian Plateau, Ridge & Valley	Appalachian Plateau	Ridge & Valley	Appalachian Plateau, Ridge & Valley	Appalachian Plateau	Ridge & Valley
2002-03	1.54	5.21	0.27	9,834.6	2,515	7,319.6
2003-04	2.39	8.63	0.49	4,769.75	1,100.5	3,669.25
2004-05	1.04	3.19	0.45	8,579	1,849	6,730

Table 9. Statewide observations (per 100 hunts) of miscellaneous animals reported by Maryland archery hunters during the 2004-05 Maryland archery season.

Animal	Total Observed	Observations Per 100 Hunts
Bat	5	0.07
Crow	502	6.83
Delmarva Fox Squirrel	252	3.43
Domestic Cat	11	0.15
Domestic Dog	7	0.10
Duck	311	4.23
Eagle	103	1.40
Eastern Chipmunk	82	1.12
Flying Squirrel	1	0.01
Geese	12,186	165.75
Kingfisher	1	0.01
Mourning Dove	338	4.60
Osprey	1	0.01
Other Raptors	133	1.81
Owl	53	0.72
Pheasant	5	0.07
Porcupine	2	0.03
Raven	1	0.01
Small Mammal (mice, voles, etc.)	3	0.04
Swan	25	0.34
Turtle	3	0.04
Vulture	3	0.04
Water bird (herons, egrets, etc.)	18	0.24
Woodchuck	56	0.76
Woodcock/Snipe	22	0.30
Woodpecker	60	0.82

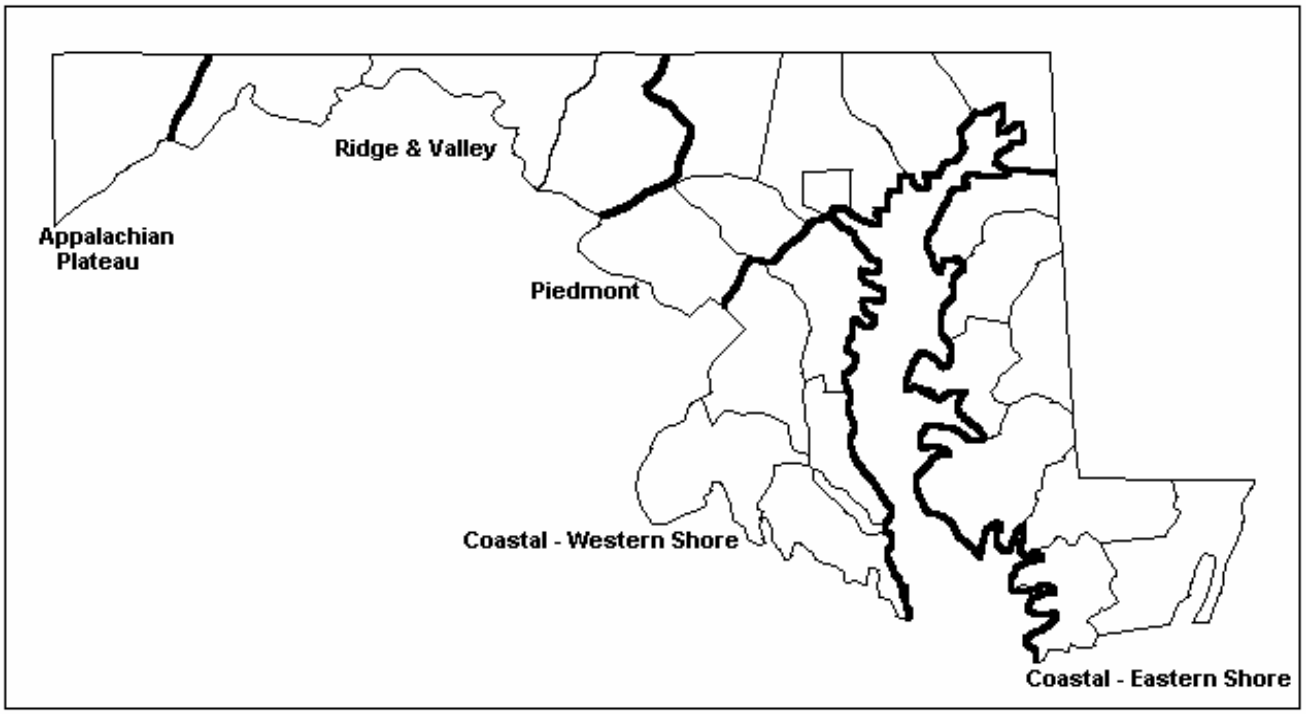

Figure 1. Physiographic Provinces for the annual Bowhunter Survey.

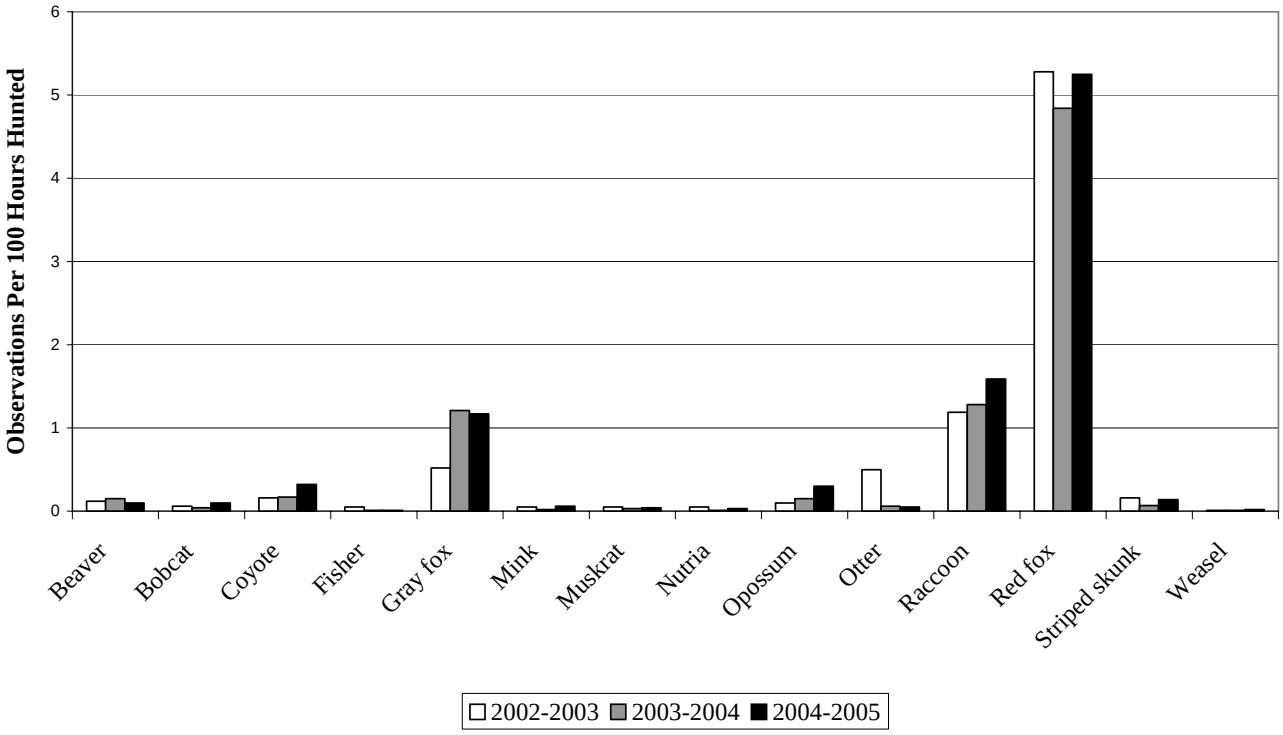

Figure 2. Furbearer observations by year by archery hunters during Maryland's archery season.

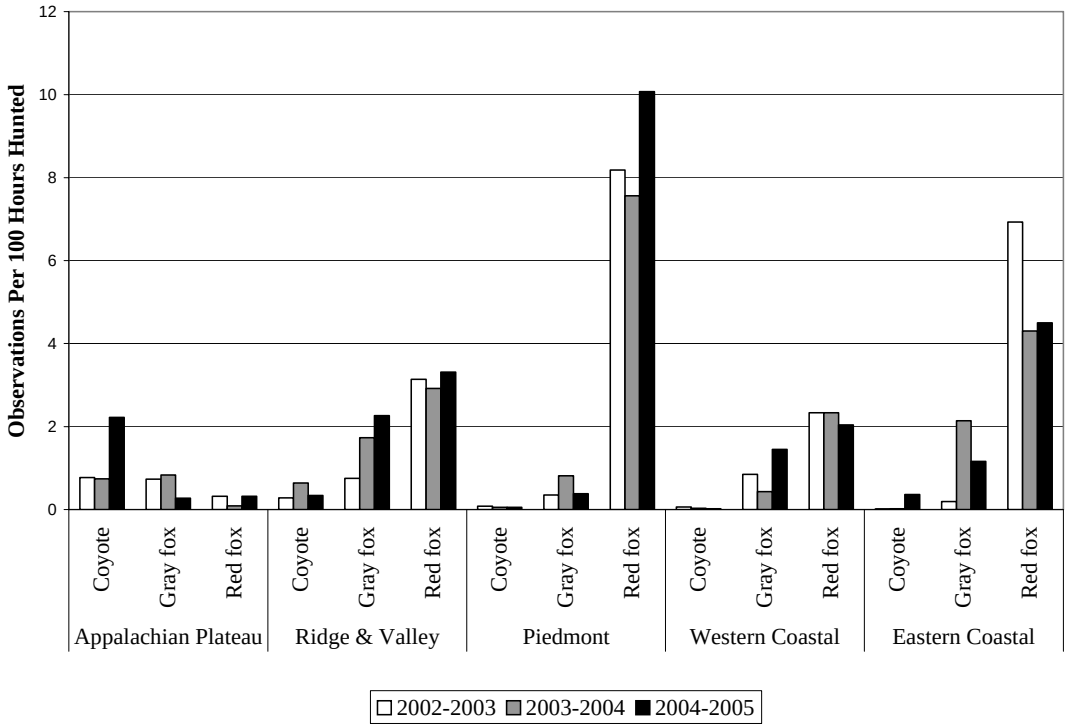

Figure 3. Canine observations by Physiographic Province and year by archery hunters during Maryland's archery season.

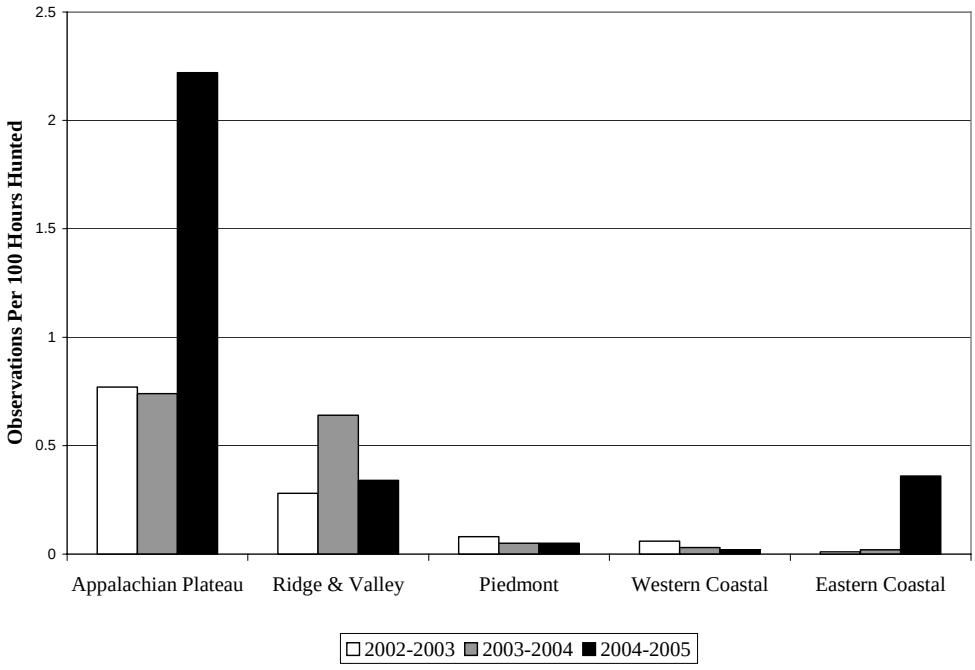

Figure 4. Coyote observations by Physiographic Province and year by archery hunters during Maryland's archery season.

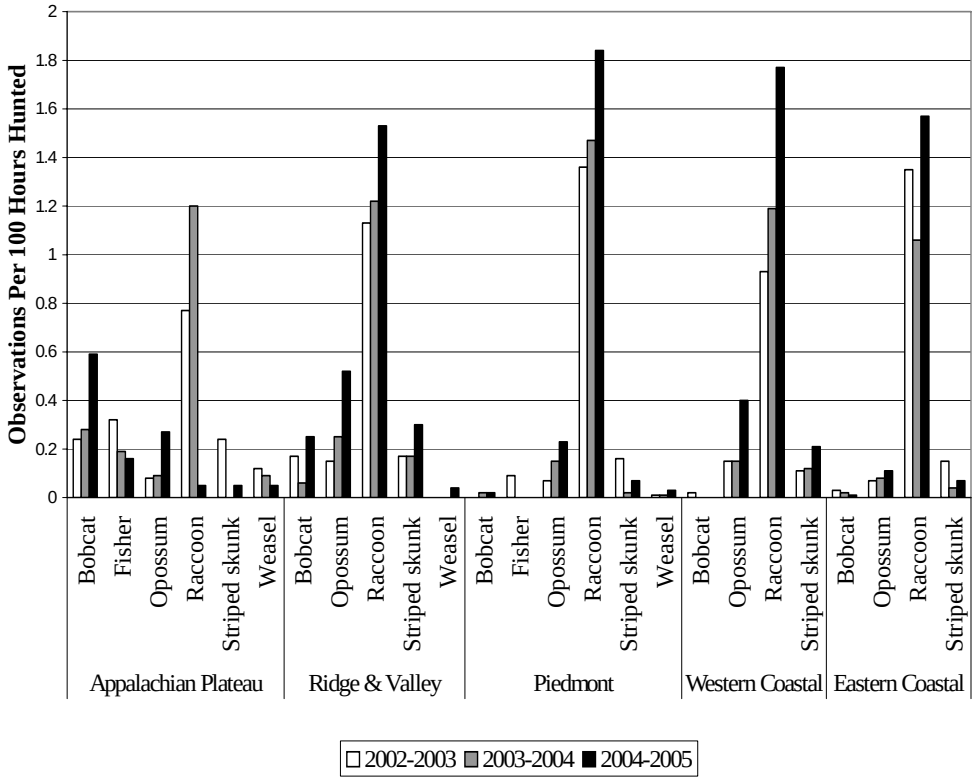

Figure 5. Terrestrial furbearer observations by Physiographic Province and year by archery hunters during Maryland's archery season.

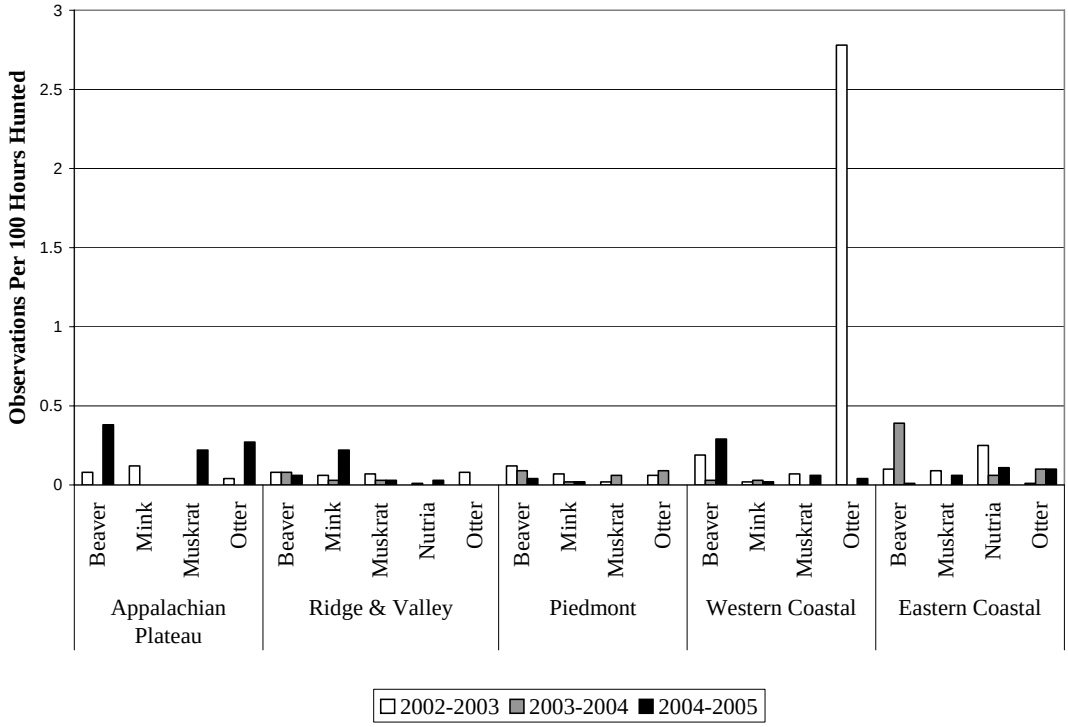

Figure 6. Aquatic furbearer observations by Physiographic Province and year by archery hunters during Maryland's archery season.

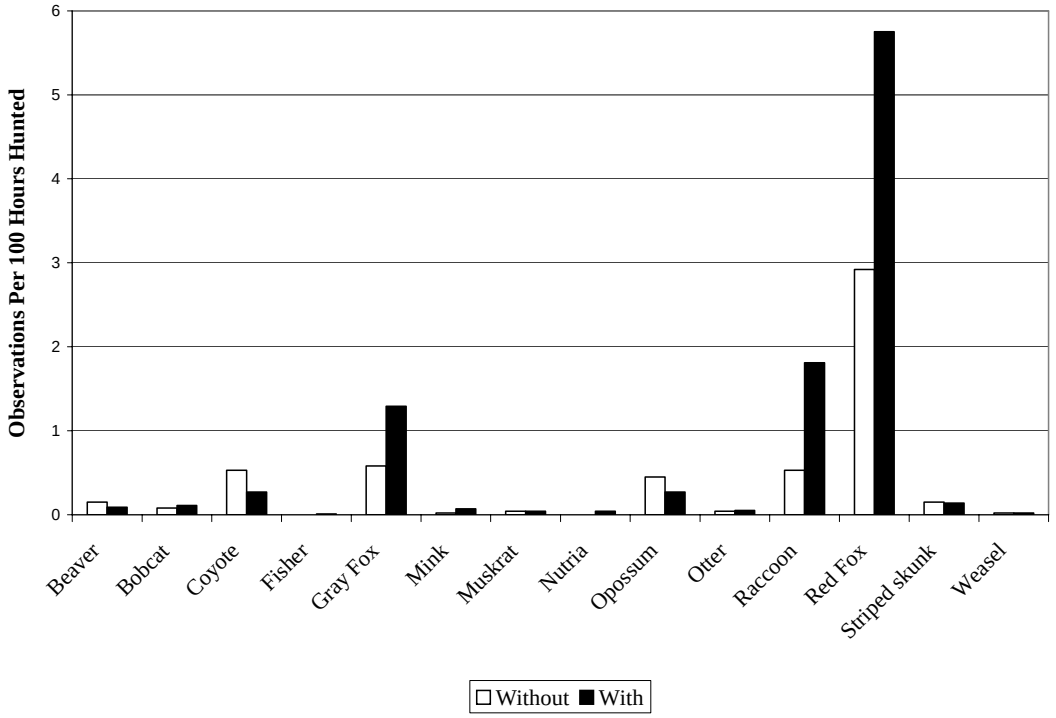

Figure 7. Furbearer observations without and with the use of elevated stands by archery hunters during the 2004-05 Maryland archery season.

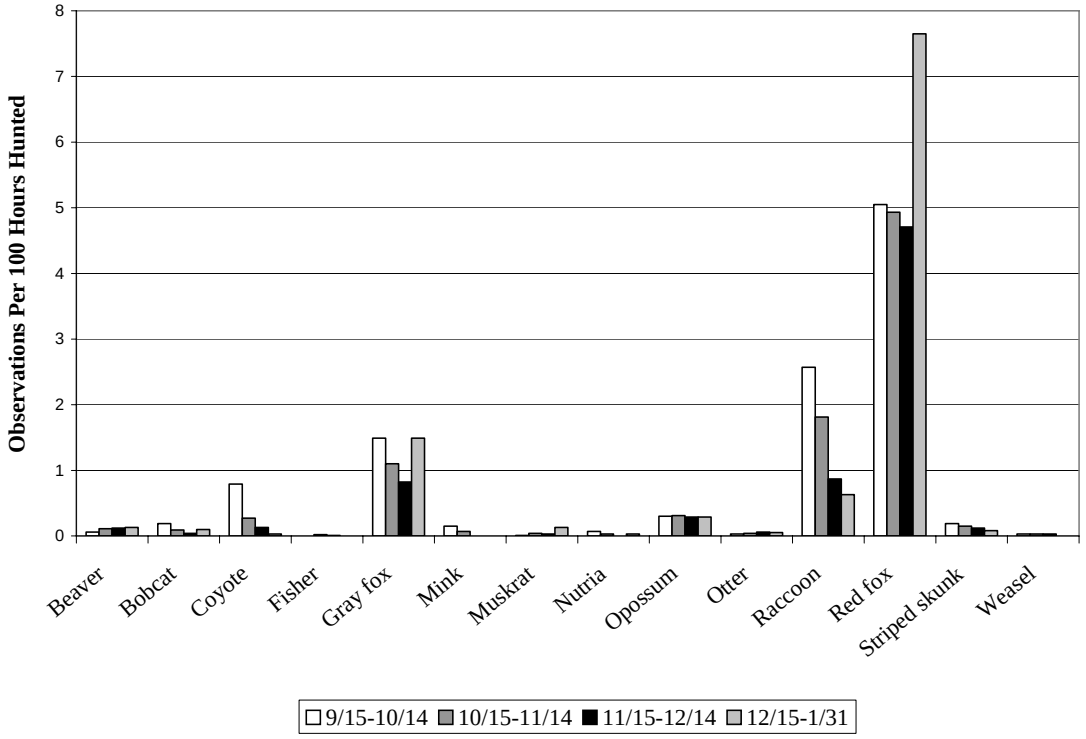

Figure 8. Monthly furbearer observation rates by archery hunters during the 2004-05 Maryland archery season.

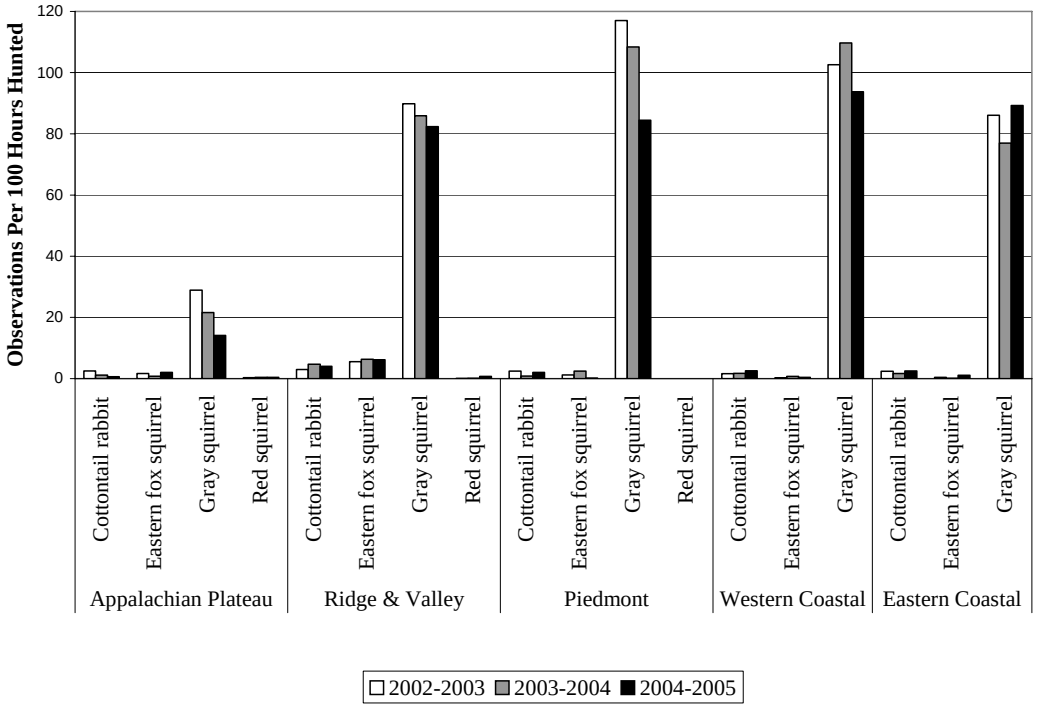

Figure 9. Rabbit and squirrel observation rates by archery hunters by Physiographic Province during Maryland's archery season.

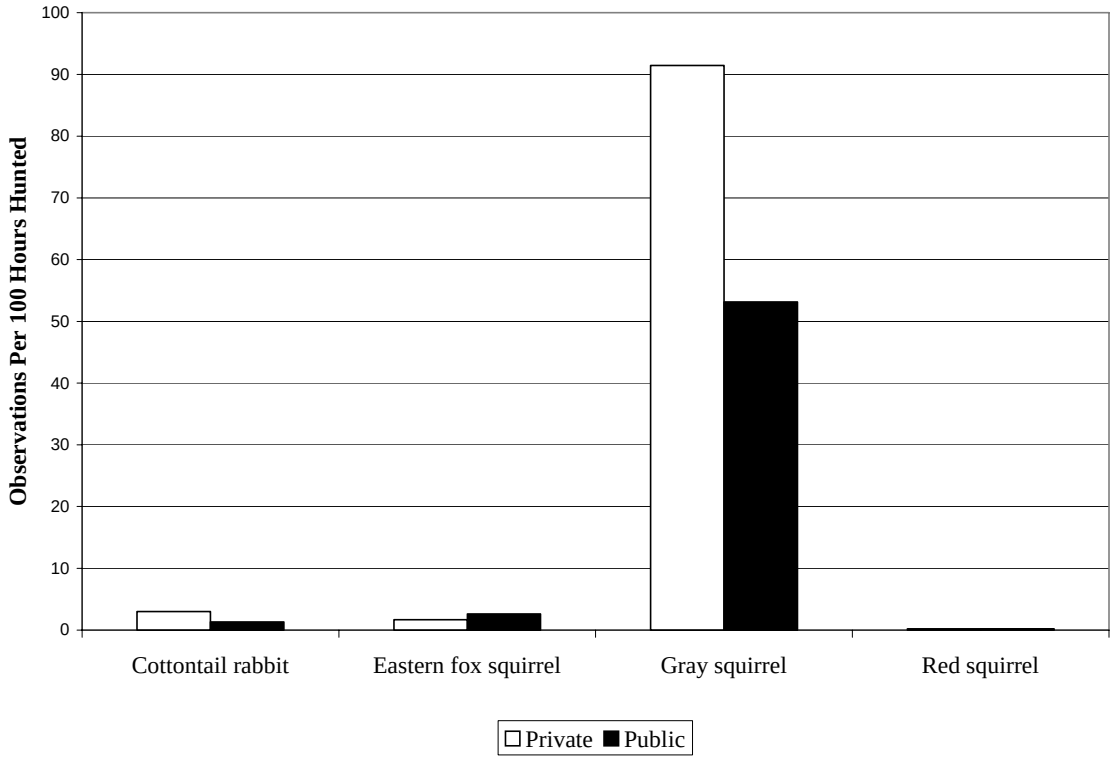

Figure 10. Rabbit and squirrel observations on private and public lands by archery hunters during the 2004-05 Maryland archery season.

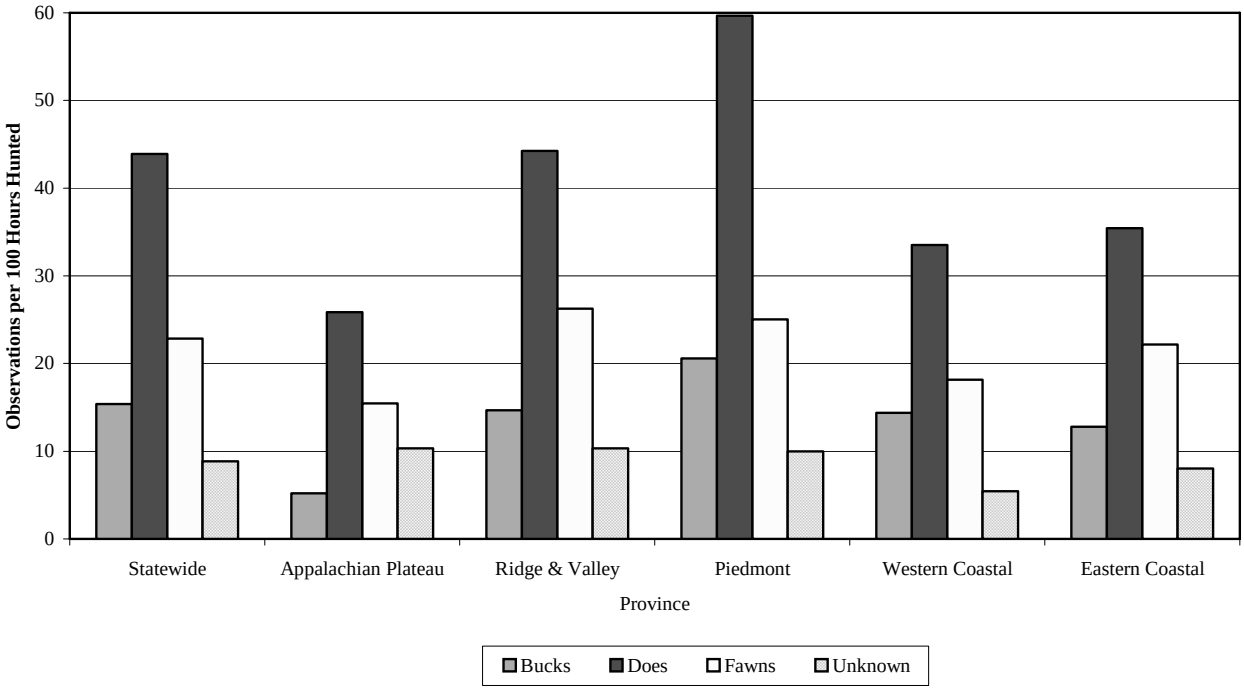

Figure 11. Number of deer observed per 100 hours hunted statewide and provincially by archery hunters during the 2004-05 Maryland archery season.

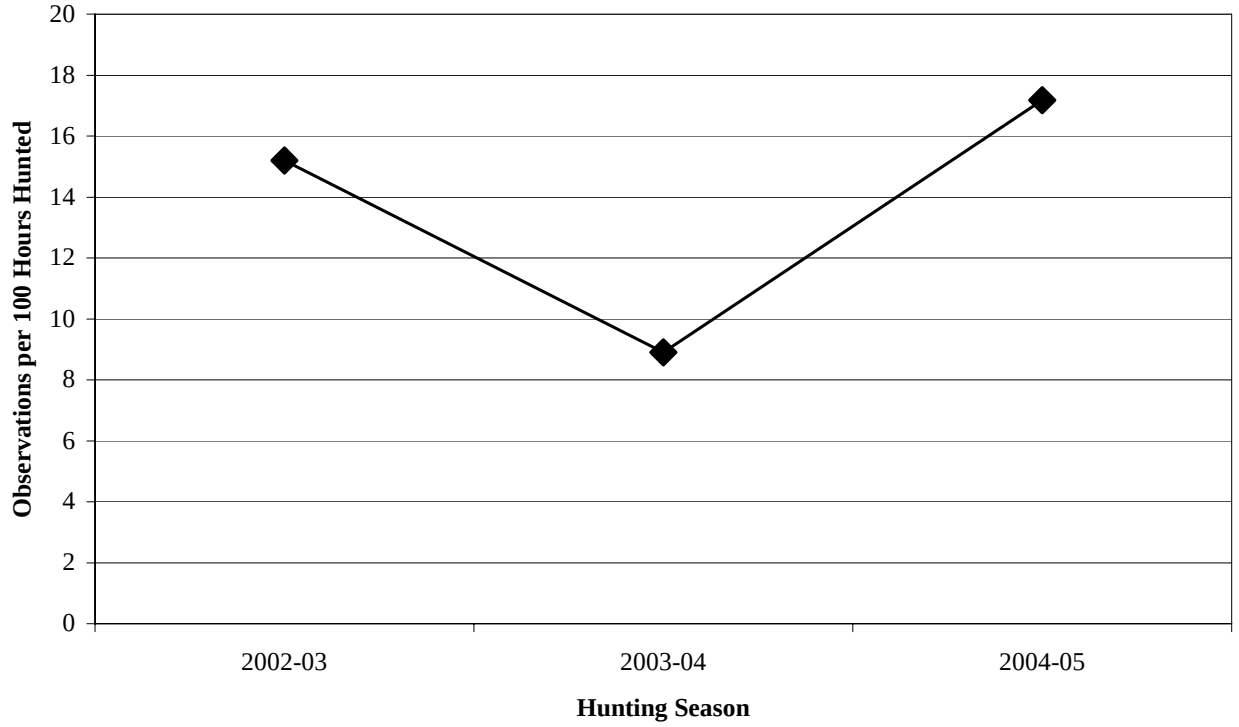

Figure 12. Number of wild turkeys observed per 100 hours hunted by archery hunters during Maryland's archery season.

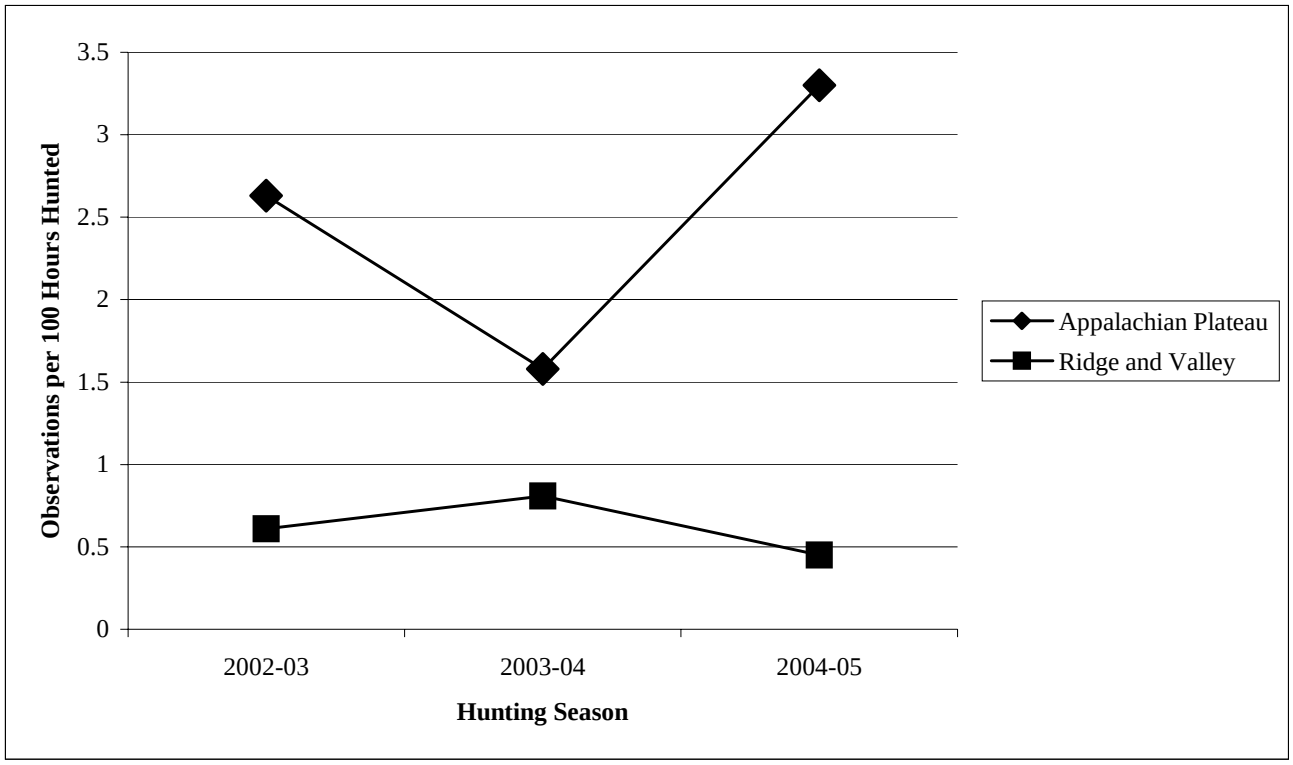

Figure 13. Number of ruffed grouse observed per 100 hours hunted by archery hunters in the Appalachian Plateau (Garrett County) and Ridge and Valley (Allegany and Washington counties) Provinces during Maryland's archery season.

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